

**Features**

- Dual N-Channel, 5V Logic Level Control
- Enhancement mode
- Fast Switching
- High Effective

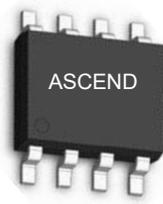
**Application**

- Power Management in Inverter System
- Synchronous Rectification

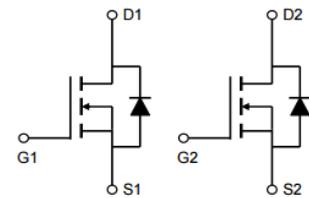
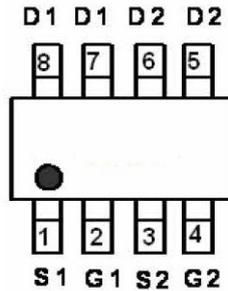
**Product Summary**

$V_{DS}$	30	V
$R_{DS(ON)-Max}$	11.5	m $\Omega$
$I_D$	11.8	A

top view



SOP-8

**Absolute Maximum Ratings@ $T_J=25^{\circ}\text{C}$ (unless otherwise specified)**

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	30	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D@T_A=25^{\circ}\text{C}$	Drain Current, $V_{GS} @ 10V^3$	11.8	A
$I_D@T_A=70^{\circ}\text{C}$	Drain Current, $V_{GS} @ 10V^3$	9.4	A
$I_{DM}$	Pulsed Drain Current <sup>1</sup>	40	A
$P_D@T_A=25^{\circ}\text{C}$	Total Power Dissipation	2.5	W
$T_{STG}$	Storage Temperature Range	-55 to 150	$^{\circ}\text{C}$
$T_J$	Operating Junction Temperature Range	-55 to 150	$^{\circ}\text{C}$

**Thermal Data**

Symbol	Parameter	Value	Unit
$R_{thj-a}$	Maximum Thermal Resistance, Junction-ambient <sup>3</sup>	50	$^{\circ}\text{C/W}$

**Electrical Characteristics@T<sub>j</sub>=25°C(unless otherwise specified)**

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	30	-	-	V
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance <sup>2</sup>	V <sub>GS</sub> =10V, I <sub>D</sub> =11A	-	9.5	11.5	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =7A	-	13.8	18	mΩ
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA	1	-	3	V
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> =10V, I <sub>D</sub> =11A	-	22	-	S
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V	-	-	10	uA
I <sub>GSS</sub>	Gate-Source Leakage	V <sub>GS</sub> =±12V, V <sub>DS</sub> =0V	-	-	±100	nA
Q <sub>g</sub>	Total Gate Charge	I <sub>D</sub> =11A	-	10.5	16.8	nC
Q <sub>gs</sub>	Gate-Source Charge	V <sub>DS</sub> =15V	-	2.5	-	nC
Q <sub>gd</sub>	Gate-Drain ("Miller") Charge	V <sub>GS</sub> =4.5V	-	6	-	nC
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DS</sub> =15V	-	7	-	ns
t <sub>r</sub>	Rise Time	I <sub>D</sub> =1A	-	6	-	ns
t <sub>d(off)</sub>	Turn-off Delay Time	R <sub>G</sub> =3.3Ω, V <sub>GS</sub> =10V	-	23	-	ns
t <sub>f</sub>	Fall Time	R <sub>D</sub> =15Ω	-	5	-	ns
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> =0V	-	790	1280	pF
C <sub>oss</sub>	Output Capacitance	V <sub>DS</sub> =25V	-	125	-	pF
C <sub>rss</sub>	Reverse Transfer Capacitance	f=1.0MHz	-	105	-	pF
R <sub>g</sub>	Gate Resistance	f=1.0MHz	-	2.1	-	Ω

**Source-Drain Diode**

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V <sub>SD</sub>	Forward On Voltage <sup>2</sup>	I <sub>S</sub> =2.1A, V <sub>GS</sub> =0V	-	-	1.2	V
t <sub>rr</sub>	Reverse Recovery Time	I <sub>S</sub> =11A, V <sub>GS</sub> =0V,	-	22	-	ns
Q <sub>rr</sub>	Reverse Recovery Charge	dI/dt=100A/μs	-	14	-	nC

**Notes:**

1.Pulse width limited by Max. junction temperature.

2.Pulse test

3.Surface mounted on 1 in<sup>2</sup> copper pad of FR4 board, t<sub>le</sub>≤10sec ; 125 °C/W when mounted on Min. copper pad.



### Typical Characteristics

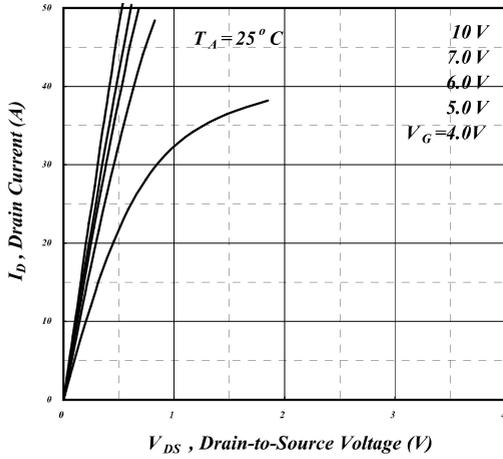


Fig 1. Typical Output Characteristics

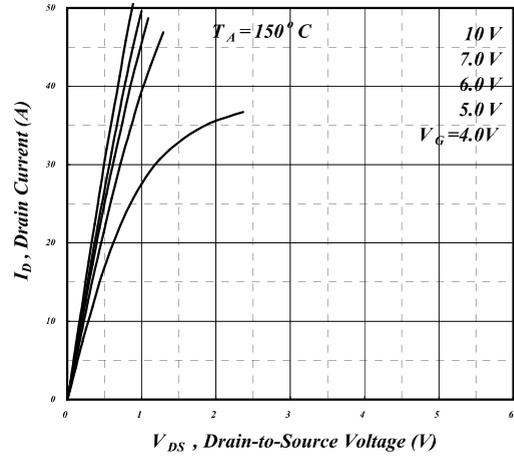


Fig 2. Typical Output Characteristics

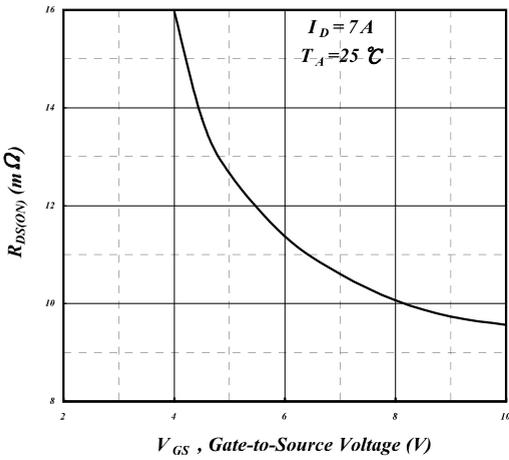


Fig 3. On-Resistance v.s. Gate Voltage

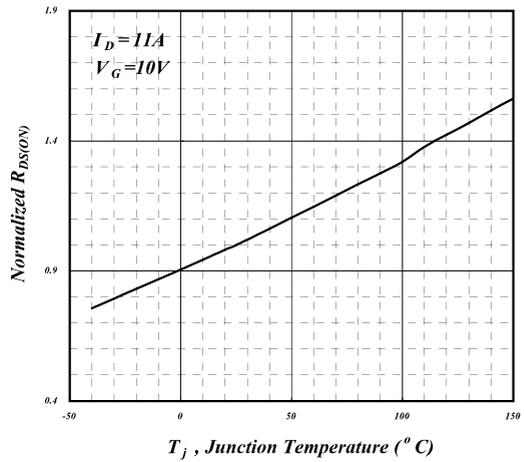


Fig 4. Normalized On-Resistance v.s. Junction Temperature

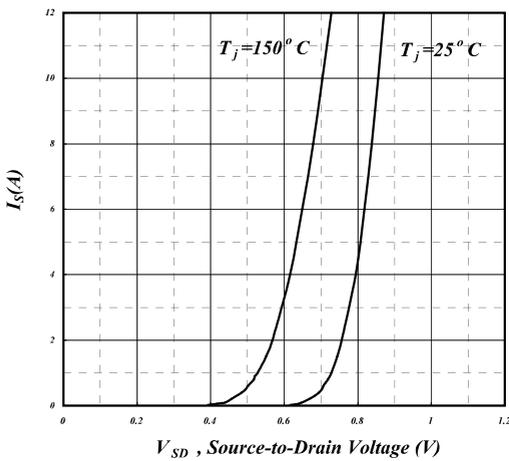


Fig 5. Forward Characteristic of Reverse Diode

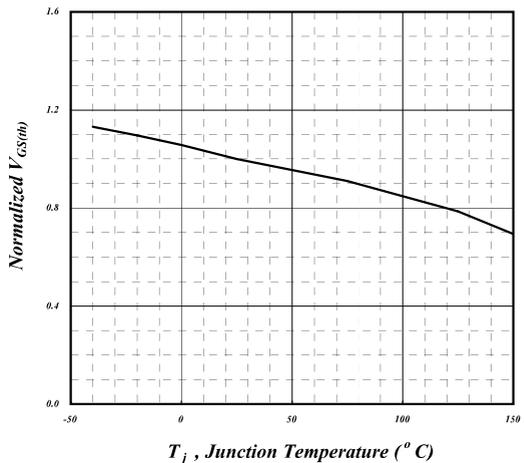


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

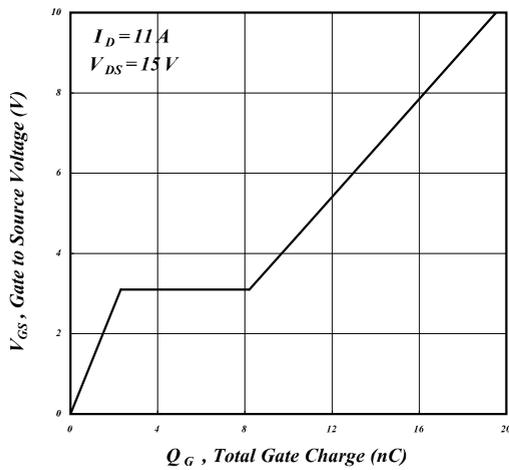


Fig 7. Gate Charge Characteristics

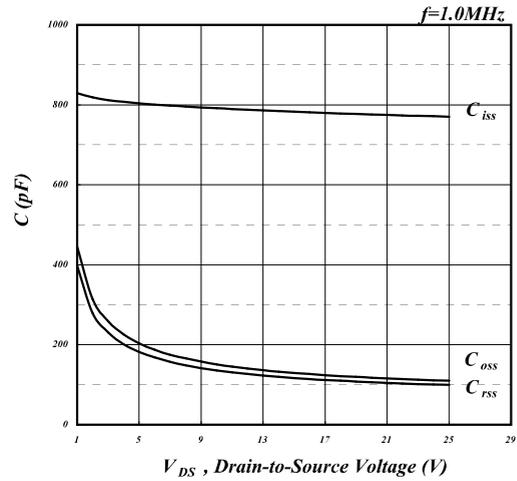


Fig 8. Typical Capacitance Characteristics

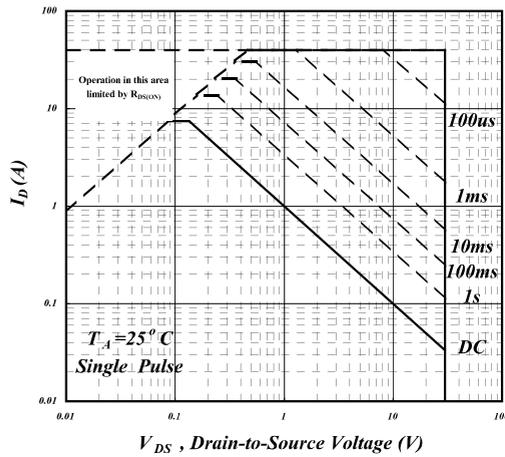


Fig 9. Maximum Safe Operating Area

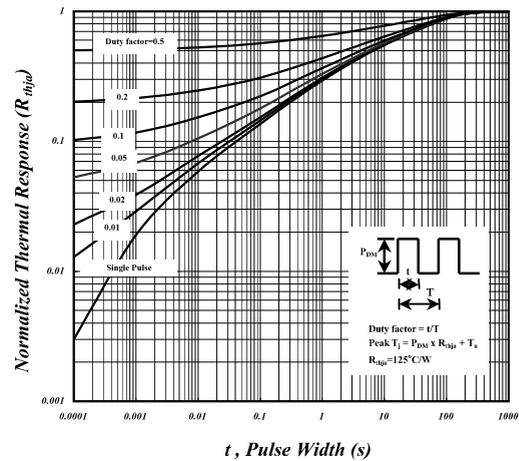


Fig 10. Effective Transient Thermal Impedance

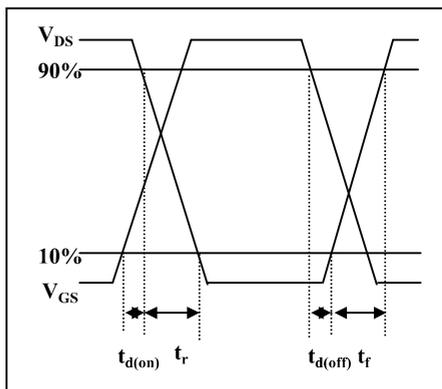


Fig 11. Switching Time Waveform

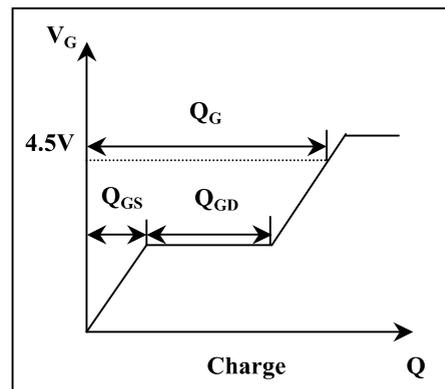
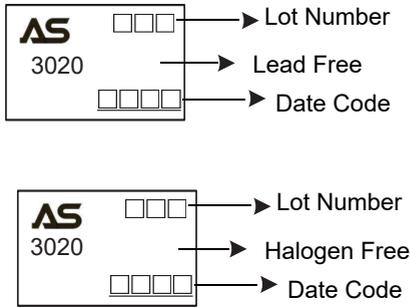


Fig 12. Gate Charge Waveform

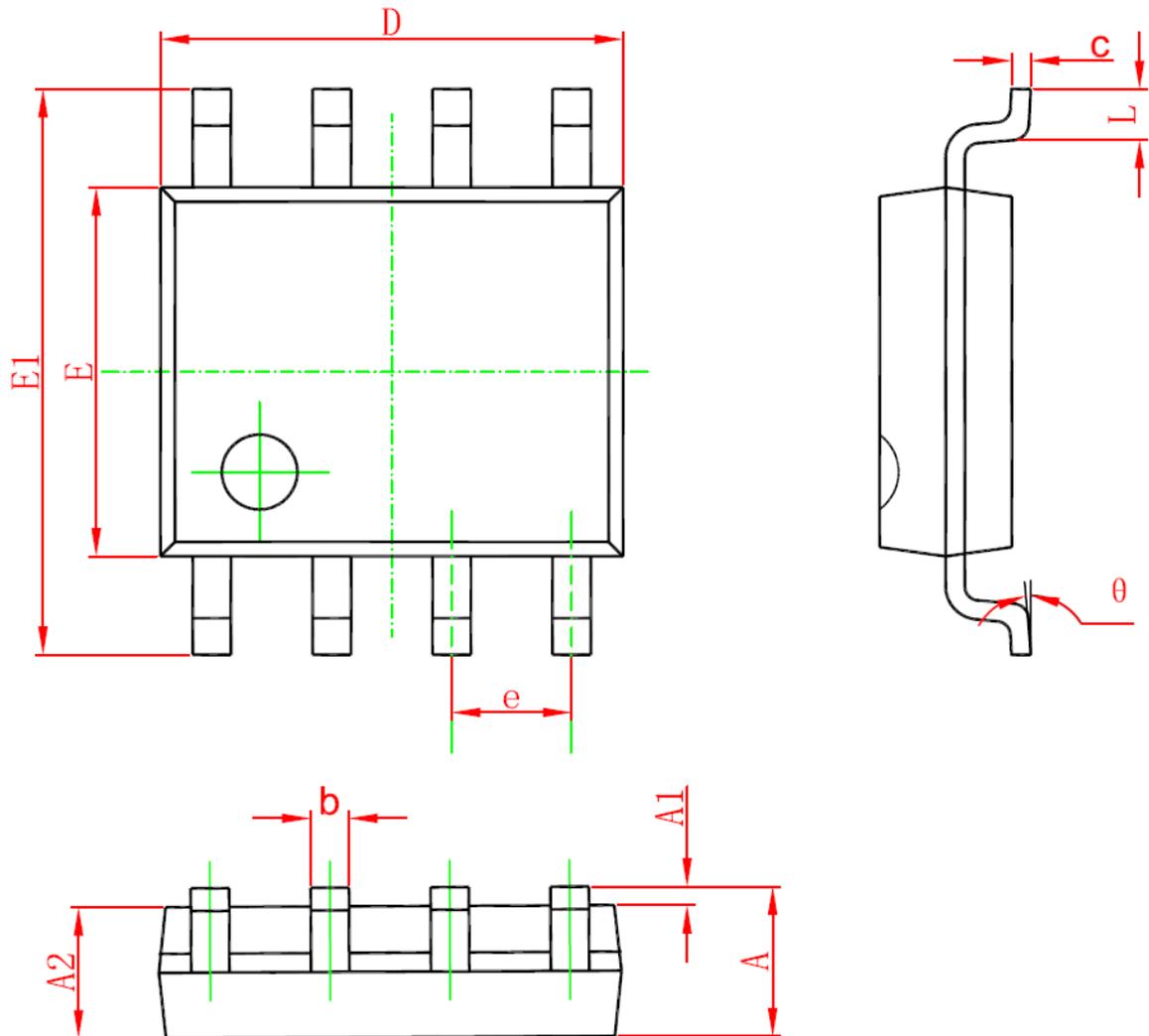
### Ordering and Marking Information

Device	Marking	Package	Packing	Quantity
ASDM3020S	3020	SOP-8	Tape Reel	4000

PACKAGE	MARKING
SOP-8	 <p>AS 3020</p> <p>Lot Number</p> <p>Lead Free</p> <p>Date Code</p>

Ordering Information		Package
Lead Free	Halogen Free	
ASDM3020-S-R	ASDM3020G-S-R	SOP--8

<p>ASDM3020<u>G</u>-<u>S</u>-<u>R</u></p>  <p>1 Packing Type</p> <p>2 Package Type</p> <p>3 Green Package</p>	<p>1 R:Tape Reel</p> <p>2 S:SOP-8</p> <p>3 blank: Lead Free</p> <p>G:Halogen Free</p>
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**SOP-8 PACKAGE IN FORMATION**

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

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